

WHAT IS CLAIMED IS:

1. A method of controlling an automatic transmission wherein a plurality of torque transmission means are provided between an input shaft and an output shaft of a gear-drive transmission, and at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches; said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

controlling gearshifting time to be shorter when a depress stroke of an accelerator pedal increases after a gearshifting start request, than that when said depress stroke of said accelerator pedal is fixed.

2. A method of controlling an automatic transmission wherein a plurality of torque transmission means is provided between an input shaft and an output shaft of a gear-drive transmission, and at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

controlling gearshifting time in accordance

with revolution speed of said input shaft at the time of a gearshifting start request.

3. A method of controlling an automatic transmission wherein a plurality of torque transmission means is provided between an input shaft and an output shaft of a gear-drive transmission, and at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

setting gearshifting time on the basis of a depress stroke of an accelerator pedal and revolution speed of said input shaft when said depress stroke of said accelerator pedal changes after a gearshifting start request.

4. A controller for an automatic transmission having a plurality of torque transmission means provided between an input shaft and an output shaft of a gear-drive transmission wherein at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, and said friction clutch is controlled when gearshifting is carried out from one gear ratio to another gear ratio, said controller comprising:

accelerator pedal depress stroke detecting means for detecting a depress stroke of an accelerator pedal;

an input shaft revolution speed sensor for detecting revolution speed of said input shaft; and

gearshifting time setting means for setting gearshifting time on the basis of said depress stroke of said accelerator pedal supplied from said accelerator pedal depress stroke detecting means and said revolution speed of said input shaft;

wherein, when said depress stroke of said accelerator pedal supplied from said accelerator pedal depress stroke detecting means changes during gearshifting, said gearshifting time is set on the basis of said depress stroke of said accelerator pedal and said revolution speed of said input shaft.

5. A method of controlling an automatic transmission wherein a plurality of torque transmission means is provided between an input shaft and an output shaft of a gear-drive transmission, and at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

controlling said friction clutch on the basis

of a difference between revolution speed of said input shaft and a target revolution speed trajectory of said revolution speed of said input shaft.

6. A controller for an automatic transmission having a plurality of torque transmission means provided between an input shaft and an output shaft of a gear-drive transmission wherein at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, and said friction clutch is controlled when gearshifting is carried out from one gear ratio to another gear ratio, said controller comprising:

revolution speed change trajectory setting means for setting a target revolution speed trajectory of revolution speed of said input shaft during gearshifting, on the basis of predetermined gearshifting time;

engine torque detecting means for estimating or detecting torque of an engine;

an input shaft revolution speed sensor for detecting said revolution speed of said input shaft;

feed forward command value setting means for setting a command value for said friction clutch on the basis of said revolution speed of said input shaft supplied from said input shaft revolution speed sensor; and

feedback command setting means for setting a

command for said friction clutch on the basis of a deviation value between said target revolution speed trajectory and said revolution speed of said input shaft.

7. A method of controlling an automatic transmission having an input clutch for transmitting driving force of an engine to an input shaft of a gear-drive transmission, a plurality of torque transmission means provided between said input shaft and an output shaft of said gear-drive transmission wherein at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

preventing an engagement operation of said friction clutch till engagement of said input clutch is completed after said engagement of said input clutch is started.

8. A method of controlling an automatic transmission having a plurality of torque transmission means between an input shaft and an output shaft of a gear-drive transmission, wherein at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches,

said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

carrying out a gearshifting operation to a gear ratio corresponding to a new gearshifting command after a gearshifting operation to said gear ratio is started in response to a gearshifting command, when said new gearshifting command to another gear ratio is issued before said gearshifting operation is completed.

9. A method of controlling an automatic transmission having a plurality of torque transmission means between an input shaft and an output shaft of a gear-drive transmission wherein at least one gear ratio of said torque transmission means is formed by a friction clutch while the other gear ratios of said torque transmission means are formed by dog clutches, said method comprising the steps of:

controlling said friction clutch when gearshifting is carried out from one gear ratio to another gear ratio; and

carrying out a gearshifting operation to a gear ratio corresponding to a new gearshifting command, after a gearshifting operation to said gear ratio is started in response to a gearshifting command, when said new gearshifting command to another gear ratio is issued before said gearshifting operation is completed, either a gearshifting method making use of said

friction clutch or a gearshifting method making no use  
of said friction clutch is selected in accordance with  
conditions during said gearshifting operation.